

Your name: _____

Your student number: _____

**University of Saskatchewan
Department of Computer Science
CMPT 490**

Final Examination
April 26, 2004

Time Limit: 3 hours

Total Marks: 90

*This is a **closed book** exam. Please write your answers legibly in the space provided **on the examination paper**. Many of the questions are subjective with no perfectly correct answer: the key is to be coherent and on topic, and to bring up the essential issues. Use point form whenever you can. If you need more space, use the back of the page, but you should note that the space provided corresponds approximately to the length of answer desired. Rough work can be done in the answer booklets. If you don't know how to answer a question, leave the space blank. You have approximately 2 minutes per mark, so budget your time appropriately*

Part I – Multiple Choice and True/False Questions
[10 marks, 1 mark/question]

1. Professional licensing is a process generally administered at the _____ level in Canada.
 - a. municipal
 - b. provincial
 - c. federal
 - d. national

2. The presence or absence of the BBB Online or _____ seal enables users to make more informed decisions about whether to release personal information (such as phone numbers, addresses, and credit card numbers) to a Web site.
 - a. TRUTH
 - b. TRYe
 - c. TRUSTe
 - d. TRUST

3. Which of the following CANNOT be blocked with the installation of a firewall? _____
 - a. Instant messaging
 - b. Denial-of-service attacks
 - c. Access to newsgroups
 - d. Web sites with violent content

4. RSA is a public key encryption algorithm that has been available since _____.
 - a. 1934
 - b. 1955
 - c. 1978
 - d. 1999

5. An ____ policy requires the data collector to get specific permission from a consumer before collecting any of his or her data.

- a. opt-in
- b. opt-out
- c. opt-gate
- d. opt-access

6. A ____ key encryption system uses a single key to both encode and decode messages.

- a. public
- b. private
- c. nominal
- d. reversal

7. The fair use doctrine is used to determine if a particular ____ can be accessed by the public without penalty.

- a. patented property
- b. trademark
- c. copyrighted property
- d. trade secret

8. What does CIA stand for in a computer security context? ____

- a. control, inform, access
- b. cover, incorporate, act
- c. confidentiality, integrity, accessibility
- d. computer intelligence agency

9. Copyrighted software may not be reverse-engineered. True or False? ____

10. A patent can prevent others from independent creation of the patented device or software. True or False? ____

Part II – Short Answers [10 marks, 2 marks/question]

The questions in this part of the exam have very short answers, normally a phrase or two. Keep your answers short and to the point. For example

11. What is the difference between utilitarian and deontological approaches to ethics?

Answer: utilitarian: an action is ethical depending upon its consequences;
deontological: an action is ethical or not by itself.

11. Explain briefly how a denial of service attack works.

12. List the factors used to judge if the use of a copyrighted material is “fair use”.

13. List three possible ways to get unauthorized access to a system.

14. Characterize briefly a “hacktivist”.

15. List the main differences between copyright and patent.

Part III – Discussion Questions [40 marks, 5 marks/question]

The answers to questions in this part of the examination require about a paragraph or so of explanation. Usually there are several points to be made. You may use point form or a list of bulleted items to make your answer clear.

16. Argue in favour of **one** of the following propositions:

- software professionals should be *licensed*
- software professionals should be *certified*.

17. Explain on high-level how public key encryption works. Be explicit; you may use a chart if you wish.

18. What are the *major* types of computer system failures?

19. List some of the different types of measures to control computer related errors.

20. Argue **for or against** the following statement:

- Internet providers should be held responsible for the content that is posted or shared by their customers.

21. Give at least 3 positive and 3 negative effects of the Internet as a forum for exercising one's right for free speech.

22. Choose and argue in favour of **one** of the following propositions:

- IT has a negative effect on community, social and interpersonal relationships
- IT has a positive effect on community, social and interpersonal relationships

24. Assume that at your workplace, you witness a poor management decision related to insufficient testing of critical software component. Failure of this component may lead to potential loss of privacy of the users whose data is handled. You voiced your disagreement to the group manager, but s/he is unconvinced. You are considering whether to blow the whistle. What factors do you need to consider in making the decision and what important stages do you need to follow if you decide to go ahead.

Part IV – Case Study [30 marks]

25. Suppose you are working as technical director for an aspiring IT company in a small prairie town that develops web-based customer survey forms for client companies. Apart from the web-based interface that allows the customers of a client company to fill-in custom made questionnaires, the software includes a powerful database that can store customer data about thousands of people. Your clients are mainly service companies, but also the local healthcare authority who also uses your software to administer periodically questionnaires to patients.

To reduce costs the management is considering outsourcing a major part of the software development including the database maintenance to a far-away country, with abundance of highly qualified IT workforce paid at lower salaries (by factor 10), such as Bulgaria, India or China. The management is asking for your opinion on this move.

You realize that the management is very interested to increase the company profits and argues that outsourcing is a question of survival for the company. On the other side, the proposed outsourcing will cost the jobs of 30-40 software local developers, who will likely be unable to find another job in town. You are concerned also about the legal aspects of having private data stored on databases out of the country and accessible via the Web.

For this question you are to write the *executive summary* of the report you would prepare for the insurance company including your recommendations. Drawing on the broad range of issues discussed in this course, you should point out the main social, ethical, and security issues related to the proposed move. You might draw upon the formal approach to ethical decision making discussed at the end of the course in order to identify risks and possible outcomes, the stakeholders involved (including you) and their rights, the ethically unacceptable, ethically obligatory and ethically acceptable decisions and their possible results. The executive summary should be

- 1.5 to 2 pages long;
- raise only the most important issues (no more than 5 or 6);
- give a synopsis of why each of them is a problem;
- give 1 or 2 major recommendations for dealing with each problem.
- end with an overall recommendation whether to proceed or not with outsourcing.

Use the back of this page (if you need it) and the next page to write your summary. PLEASE, write legibly!!

Project Group Evaluation

Evaluate the contribution of everyone in your project group, including yourself. State contributions as percentages, and base the evaluations on both the *extent* of participation (time and effort) and on the *quality* of participation (knowledge, technical skills, writing skills, etc.). The numbers should add up to 100%: for example, person A contributed 35%, B 20%, and C 45%. These evaluations (from *all* the members of your group) will be taken into account in assigning final project marks to each person. Additional comments will also be considered and appreciated. These evaluations and comments will be kept *completely confidential*.

Your Name: _____

Your Group Number: _____

Member Name	Percent Contribution
1. YOU	
2.	
3.	

Additional comments about your group or specific group members:

THE END – Have a good summer!